Inspiring Innovation • Persistent Perfection

# P7F7-E WS Supercomputer

## Leading I/O Solution to Experience Fastest Transmission Speed

- Intel LGA1156 Platform/Intel 3450 Express Chipset
- Leading I/O Solution with trueUSB3.0 , SATA 6Gb/s and IEEE 13
- 3-way/2-way NVIDIA SLI Support & ATI Quad CrossFireX on dem
- Massive Computing Power with CUDA Parallel Processing– Up
  Tesla GPUs
- ASUS GPU Boost

## Workstation Engine Essential in Your Professional Studio

The ASUS Workstation Series is the ideal foundation for a powerful PC. It delivers awesome power, dependable performance and unparallel multiple I/O scalability for the most demanding tasks and future upgrades. Also, it provide extreme power saving experience with EUP 6 Engine function. The ASUS Workstation Series intelligently reduces operation noise and dissipates heat through advanced and environmentally friendly methods to accommodate user needs. Don´t change yourself for a computer. Instead, let ASUS Workstation Series improves the quality of your work and life.

## ASUS Workstation Exclusive Features

### Sufficient IO bandwidth for 3 way and 2 way SLI

**The Best Graphic Performance you Ever have**

The 4 PCIe run on the speed of quad x8 or dual x16 links gives you the most reliable 3-Way SLI graphic performance you ever have when you are engaged in Mechanical / Architecture / Interior / Aircraft / Audio / Video Design or when you are playing games in leisure time.Besides, P7F7-E WS SuperComputer provide you the fastest 2-Way SLI graphic performance when you install Geforce graphic cards in the two blue PCIe x16 lots which can work at 16 links.

### CUDA parallel computing power supported

The motherboard will achieve outstanding and dependable performance in the role of a Personal Supercomputer when working in tangent with discrete CUDA technology—providing unprecedented return on investment. Users can count on up to 4 Tesla cards with Clarkdale CPU which is built with on-board graphic chipset, that are plugged into P7F7-E WS SuperComputer for intensive parallel computing on tons of data, which delivers nearly 4 teraflops of performance. It is the best choice to work as a personal supercomputer on your desk instead of a computer cluster in a room.

### DDR3 ECC memory and embedded 6 memory slots support

### ASUS Heartbeat

The P7F7-E WS SuperComputer can support both DDR3 non-ECC and ECC un-buffered memory.ECC stands for "Error Correction Codes" and is a method used to detect and correct errors introduced during storage or transmission of data.Embedded with six memory slots, the motherboard can accommodate up to 16GB of DDR3 memory. The flexible options include installing four 4GB modules or two 4GB modules and two 2GB modules. As the price of 2GB modules is 15% less than 4GB modules, the ASUS P7F7-E WS SuperComputer provides the flexibility to get the most RAM at the lowest cost (Please check memory QVL on website) .

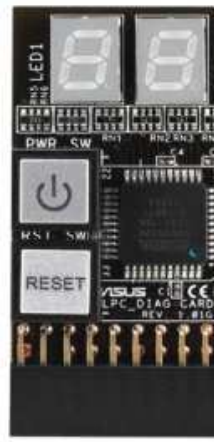
Brightly and vividly lighting LEDs shine around the ASUS brand name on the motherboard after successful booting process. With the breath-like deep blue lighting shining in regular tempo, ASUS Heartbeat makes the motherboard as vivid as life.

## Diag. LED

Diag. LED checks key components (CPU, DRAM, VGA card, and HDD) in sequence during motherboard booting process. If an error is found, the LED next to the error device will continue lighting until the problem is solved. This usr-friendly design provides an intuitional way to locate the root problem within a second.

## G.P. Diagnosis Card (bundled)

Bundled with the P7F7-E WS SuperComputer motherboard, the G.P. Diagnosis card assists users in system checking by effortlessly and quickly providing precise system checks right after they switch on their PCs.




## ASUS SASsaby Card Support

This motherboard is fully compatible with ASUS SAS card (the SASsaby card series, optional). Faster, safer and more stable, SAS will provide users with a better choice for storage expansion and upgrade needs.

# CPU, Chipset and Graphics features

## LGA1156 Intel® Lynnfield Processor Ready

This motherboard supports the latest Intel® Lynnfield and Clarkdale processors in LGA1156 package, which has memory and PCI Express controller integrated to support 2-channel (6 DIMMs) DDR3 memory and 16 PCI Express 2.0 lanes providing higher graphics performance. Moreover, Intel® Clarkdale integrated Graphics Processing Unit (GPU) processors which goes with Intel® 3450 chipset with VGA out can bring you to the whole new experience of the next generation VGA performance. It also provides separated 3D, 2D and Video Engines to execute different graphic control in hardware.

## Intel 3450

The Intel® 3450 Express Chipset is the latest one-chipset design to support latest 1156 socket Intel® Xeon® / Core™ i7/Core™ i5/Core ™ i3/Pentium™ Processors. Intel® 3450 provides IT a way to better discover, heal, and protect their networked computing assets by utilizing Intel® Active Management Technology 6.0 and Intel® Remote PC Assist Technology for Business.

## SLI Technology

NVIDIA SLI™ (Scalable Link Interface) takes advantage of the increased bandwidth of the PCI Express bus architecture and features intelligent hardware and software that allows two GPUs to efficiently work together to deliver earth-shattering, scalable performance. For some applications nearly 2X performance! (From www.NVIDIA.com)

## PCIe 2.0

This motherboard supports the latest PCIe 2.0 devices for double speed and bandwidth which enhances system performance.

## CUDA Technology

## CrossFireX technology

NVIDIA® CUDA™ is a general purpose parallel computing architecture that leverages the parallel compute engine in NVIDIA graphics processing units (GPUs) to solve many complex computational problems in a fraction of the time required on a CPU.With over 100 million CUDA-enabled GPUs sold to date, thousands of software developers are already using the free CUDA software development tools to solve problems in a variety of professional and home applications – from video and audio processing and physics simulations, to oil and gas exploration, product design, medical imaging, and scientific research (From www.NVIDIA.com).

ATI CrossFireX™ is the ultimate multi-GPU performance gaming platform. Enabling game-dominating power, ATI CrossFireX technology enables two or more discrete graphics processors to work together to improve system performance. For The Ultimate Visual Experience™, be sure to select ATI CrossFireX ready motherboards for AMD and Intel® processors and multip ATI Radeon™ HD graphics cards(From www.amd.com)

### Quad-GPU SLI and Quad-GPU CrossFireX Support!

**Flexible Multi-GPU solutions, Your Weapon of Choice!**
P7F7-E WS SuperComputer brings you the multi-GPU choice of either SLI™ or CrossFireX. The motherboard features the most powerful Intel 3450 platform to optimize PCIe allocation in multiple GPU configurations. Expect a brand-new gaming style you've never experienced before!

## Memory Features

### Dual-Channel DDR3 2000(O.C.) / 1600 / 1333 / 1066 support

The motherboard supports DDR3 memory that features data transfer rates of 2000(O.C.) / 1600 /1333 / 1066 MHz to meet the higher bandwidth requirements of the latest 3D graphics, multimedia, and Internet applications. The dual-channel DDR3 architecture enlarges the bandwidth of your system memory to boost system performance.

## VGA Output Support

### DVI Support

(Digital Visual Interface) provides high visual quality of digital display devices such as LCD monitor. The interface of this motherboard supports dual VGA output both DVI-I and RGB.

## Future Transfer Technology

### True USB 3.0 Support

**Unique PCIe x4 Bridge Chip for Ultra Performance**
Experience ultra-fast data transfers at 4.8Gbps with USB 3.0—the latest connectivity standard. Built to connect easily with next generation components and peripherals, USB 3.0 transfers data 10X faster and is also backward compatible with USB 2.0 components.

### True SATA 6Gb/s Support

**Unique PCIe x4 Bridge Chip for Ultra Performance**
Supporting next-generation Serial ATA (SATA) storage interface, this motherboard delivers up to 6.0Gb/s data transfer rates. Additionally, get enhanced scalability, faster data retrieval, double the bandwidth of current bus systems.

### Dual IEEE 1394b Support

IEEE 1394b interface provides high speed digital interface for audio/video appliances such as digital television, digital video camcorders, storage peripherals & other PC portable devices. The full IEEE 1394b specification supports data rates up to 400 Mbps—doubling the previous IEEE 1394a speeds.

## ASUS Xtreme Design - Hybrid Precessor

### ASUS TurboV EVO

### ASUS GPU Boost

**Ultimate O.C. Processor**
Whether novice or enthusiast, TurboV Evo satisfies overclockers of any level. Intelligently push systems to the fastest, stable clock speeds with Auto-Tuning. Turbo Key boosts performance with a simple touch, while TurboV offers additional advanced options for breaking those records!

**Instant iGPU Level Up!**
GPU Boost overclocks the integrated GPU in real time for the best graphics performance. User-friendly UI facilitates flexible frequency and voltage adjustments. Its ability to deliver multiple overclocking profiles also provides rapid and stable system-level upgrades.

### Auto Tuning

**Auto System Level Up**
Achieve extreme yet stable overclocking results automatically with Auto Tuning! With built-in stability testing, Auto Tuning lets even beginners improve performance with no additional cost.

## ASUS Xtreme Design - Hybrid Phase

### ASUS Hybrid 16+3 Phase Power Design

The groundbreaking Hybrid 16+3 phase VRM design is brought to the ASUS motherboards. Hybrid 16+3 phase power design, 16-phase for vCore and extra 3-phase for Memory controller inside CPU, can provide the highest power efficiency, and hence generates less heat to effectively enhance the overclocking capability. With the high quality power components such as low RDS (on) MOSFETs, Ferrite core chokes with lower hysteresis loss and 100% Japan-made high quality conductive polymer capacitors, ASUS Hybrid 16+3 phase VRM design also ensure longer component life and minimum power loss.

### T.Probe

**Leading Active Cooling Technology**
The T.Probe microchip detects and balances power phase loads and temperatures real-time. With optimal power phase functions, components run cooler and extend system lifespan.

## ASUS Xtreme Design - Hybrid OS

### ASUS Express Gate SSD

**Instant Online! Instant Fun!**
Express Gate SSD is an ASUS exclusive OS that provides you with quick access to the Internet and key applications before entering the Windows® OS.

## ASUS Exclusive Features

### ASUS EPU

**System Level Energy Saving**
The new ASUS EPU - the world's first power saving engine, has been upgraded to a new six engine version, which provides total system power savings by detecting current PC loadings and intelligently moderating power in real-time. With auto phase switching for components (which includes the CPU, VGA card, memory, chipset, drives and system fan), the EPU automatically provides the most appropriate power usage via intelligent acceleration and overclocking - helping save power and money.

### MemOK!

**Any Memory is A-OK!**
MemOK! quickly ensures memory boot compatibility. This remarkable memory rescue tool requires a mere push of a button to patch memory issues. MemOK! determines failsafe settings and dramatically improves your system boot success. Get your system up and running in no time!

## ASUS Quiet Thermal Solution

### Up to 20°C(36°F) Cooler - Stack Cool 3+

**Up to 20°C(36°F) Cooler - Stack Cool 3+ Effective Fanless Heat Dissipation at 0dB**

### ASUS Fanless Design - Heat-pipe solution

Stack Cool 3+ is a fanless cooling solution offered exclusively by ASUS. It effectively and noiselessly transfers heat generated by the critical components to the other side of the specially designed PCB (printed circuit board) for effective heat dissipation - making temperatures cooler by up to 20°C.

The Heat Pipe design effectively directs the vCore area heat to the heatsink near the back IO ports, where it can be carried away by existing airflow from CPU fan or bundled optional fan. The purpose of the innovative heat pipe design on this motherboard is that the groundbreaking fanless design does not have lifetime problems as a chipset fan does. The Heat Pipe design is the most reliable fanless thermal solution to date.

### Fan Xpert

**Active Quiet & Cool**

ASUS Fan Xpert intelligently allows users to adjust both the CPU and chassis fan speed according to different ambient temperature , which is caused by different climate conditions in different geographic regions and system loading.Built-in variety of useful profiles offer flexible controls of fan speed to achieve a quiet and cool environment.

## ASUS Crystal Sound

### 10-channel Audio

**Absolute Pitch BD 192/24 featuring ENVY HD - 10-channel Audio Feel the Prodigious Multi-channel BD Sensation**

ENVY HD featuring prodigious 10 high definition audio, fine-textured graphic user interface simply brings the professional surround acoustic level to the PC sound industry. Also, Absolute Pitch BD192/24 delivers 192khz/24bit Hi-Fi BD lossless, extreme fidelity sound to bring true BD audio technology to the home theater PC.

### DTS

**DTS Surround Sensation UltraPC**

DTS Surround Sensation UltraPC delivers exceptional 5.1 surround experience through the most common PC audio setups - your existing stereo speakers or headphones. In addition to virtual surround, “Bass enhancement” provides stronger low frequency bass sound, and “Voice clarification” provides clear human dialogue even with loud background sound. With these technologies, you may experience a better home-theate audio with ease.

### Noise Filter

**Eliminate background noise while recording**

This feature detects repetitive and stationary noises like computer fans, air conditioners, and other background noises then eliminates it in the incoming audio stream while recording.

## ASUS EZ DIY

### ASUS Q-Design

**DIY quickly, DIY easily!**

ASUS Q-Design enhances your DIY experience. All of Q-LED, Q-Slot and Q-DIMM design speed up and simplify the DIY process!

### Q-Connector

**Make connection quick and accurate!**

The ASUS Q-Connector allows you to connect or disconnect chassis front panel cables in one easy step with one complete module. This unique adapter eliminates the trouble of plugging in one cable at a time, making connection quick and accurate.

### Q- Shield

**Easy and Comfortable Installations**

The specially designed ASUS Q-Shield does without the usual "fingers" - making it convenient and easy to install. With better electric conductivity, it ideally protects your motherboard against static electricity and shields it against Electronic Magnetic Interference (EMI).

### EZ-Flash 2

**Simply update BIOS from a USB flash disk before entering the OS**

EZ Flash 2 is a user-friendly BIOS update utility. Simply launch this tool and update BIOS from a USB flash disk before entering the OS. You can update your BIOS only in a few clicks without preparing an additional floppy diskette or using an OS-based flash utility.

### O.C. Profile

**Conveniently store or load multiple BIOS settings**
Freely share and distribute favorite overclocking settings. The motherboard features the ASUS O.C. Profile that allows users to conveniently store or load multiple BIOS settings. The BIOS settings can be stored in the CMOS or a separate file, giving users freedom to share and distribute their favorite overclocking settings.

## Industry Standard

### S/PDIF-out on Back I/O Port

This motherboard provides convenient connectivity to external home theater audio systems via coaxial and optical S/PDIF-out (SONY-PHILIPS Digital Interface) jacks. It allows to transfer digital audio without converting to analog format and keeps the best signal quality.

## RoHS

### GreenASUS

The motherboard and its packaging comply with the European Union´s Restriction on the use of Hazardous Substances (RoHS). This is in line with the ASUS vision of creating environment-friendly and recyclable products and packaging to safeguard consumers´ health while minimizing the impact on the environment.

# Specifications

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|---|---|
| CPU | Intel® Socket 1156 Core™ i7/Core™ i5/Core™ i3/Pentium® Processors<br>* Refer to www.asus.com for CPU support list |
| Chipset | Intel® Ibex Peak 3450/NVIDIA NF200 |
| Memory | 6 x DIMM, Max. 16GB, DDR3 2000(O.C.)/1333/1066/800 MHz ECC, Non-ECC, Un-buffered Memory<br>Dual Channel Memory Architecture<br>Supports Intel® Extreme Memory Profile (XMP)<br>* Please load X.M.P in BIOS for hyper DIMM (DDR3 1333MHz or above) support.<br>* Due to Intel spec definition, DIMMs of DDR3 1333 or above are supported by specific CPU models only.<br>* ECC Un-buffered memory support requires Intel® Xeon X3400 series or L3400 series processors. |
| Graphic | Integrated Graphics Processor<br>Multi-VGA output support : DVI/RGB ports<br>- Supports DVI with max. resolution 1920 x 1200 @ 60 Hz<br>- Supports RGB with max. resolution 2048 x 1536 @ 75 Hz<br>Maximum shared memory of 1748 MB |
| Multi-GPU Support | Supports NVIDIA® 3-Way SLI™ Technology<br>Supports NVIDIA® SLI™ Technology<br>Supports AMD Quad-GPU CrossFireX™ Technology<br>Supports AMD CrossFireX™ Technology |
| CUDA Core | Up to 3 NVIDIA Tesla cards + 1 NVIDIA Quadro card<br>Up to 4 NVIDIA Tesla cards (only for Clarkdale processor) |
| Expansion Slots | 4 x PCIe 2.0 x16 (dual x16 or quad x8)<br>3 x PCIe x1 |
| Storage | **Intel® Ibex Peak 3450 Chipset :**<br>6 x SATA 3Gb/s port(s), blue<br>Support Raid 0, 1, 5, 10<br>**Marvell® PCIe 9128 controller :** *1<br>2 x SATA 6Gb/s port(s), white<br>Support Raid 0, 1 |
| LAN | Realtek® 8112L, 2 x Gigabit LAN Controller(s)<br>Support Teaming Technology |
| Audio | VIA VT2020 10-Channel High Definition Audio CODEC<br>- Supports : Jack-detection, Multi-streaming, Front Panel Jack-retasking<br>**Audio Feature :** |

| | |
|---|---|
| | - ASUS Noise Filter<br>- Optical S/PDIF out port(s) at back panel |
| IEEE 1394 | LSI® FW643E-02 controller<br>1 x IEEE 1394a port(s)<br>2 x IEEE 1394b port(s) |
| USB Ports | **NEC® USB 3.0 controller :**<br>2 x USB 3.0 port(s) (2 at back panel, blue)<br>**Built-in Controller :**<br>12 x USB 2.0 port(s) (4 at back panel, black, 8 at mid-board) |
| Workstation Feature | 4 x PCIe x16 slot(s)<br>G.P. Diagnosis Card bundled<br>Quick Gate: 2 x vertical USB 2.0 on board<br>ASUS SASsaby series Cards support<br>ASUS WS Diag. LED<br>ASUS WS Heartbeat |
| Special Features | **ASUS Xtreme Design :**<br>**ASUS TurboV EVO :**<br>- GPU Boost<br>**ASUS EPU :**<br>- EPU<br>**ASUS Power Design :**<br>- 16 +3 Phase Power Design<br>**Turbo Key**<br>**ASUS Exclusive Features** :<br>- MemOK!<br>- Express Gate<br>**ASUS Quiet Thermal Solution** :<br>- Stack Cool 3 +<br>- ASUS Fan Xpert<br>**ASUS EZ DIY :**<br>- ASUS O.C. Profile<br>- ASUS CrashFree BIOS 3<br>- ASUS EZ Flash 2<br>- ASUS MyLogo 2<br>- Multi-language BIOS<br>**ASUS Q-Design :**<br>- ASUS Q-DIMM<br>- ASUS Q-Connector |
| Back I/O Ports | 1 x PS/2 keyboard/mouse combo port(s)<br>1 x DVI<br>1 x IEEE 1394a<br>2 x IEEE 1394b<br>2 x LAN (RJ45) port(s)<br>2 x USB 3.0<br>4 x USB 2.0<br>1 x Optical S/PDIF out<br>6 x Audio jack(s) |
| Internal I/O Ports | 3 x USB 2.0 connector(s) support(s) additional 6 USB 2.0 port(s)<br>2 x Vertical USB 2.0 port(s)<br>1 x TPM connector(s)<br>1 x COM port(s) connector(s)<br>1 x CPU Fan connector(s)<br>3 x Chassis Fan connector(s)<br>1 x Power Fan connector(s)<br>1 x S/PDIF out header(s)<br>1 x 24-pin EATX Power connector(s)<br>1 x 8-pin ATX 12V Power connector(s)<br>1 x 4-pin EZ_PLUG Power connector(s)<br>1 x Front panel connector(s) (20 -pin)<br>1 x CD audio in(s)<br>1 x MemOK! button(s) |

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|---|---|
| BIOS<br>Manageability | 64 Mb Flash ROM, AMI BIOS, Green, PnP, DMI v2.0, ACPI v2.0a, SMBIOS v 2.6<br>WOL/WOR by PME, WfM 2.0, DMI 2.0, WOL by PME, WOR by PME, PXE |
| Form Factor | ATX Form Factor<br>12 inch x 9.6 inch ( 30.5 cm x 24.4 cm ) |
| Note | * These SATA ports are for data hard drives only. ATAPI devices are not supported. |